



PATENT

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TECHNOLOGY CENTER 2800

Application No.: 09/817,559
Filing Date: March 26, 2001
Applicant: Peachee et al.
Group Art Unit: 2834
Examiner: Julio C. Gonzalez
Title: SENSORLESS SWITCHED RELUCTANCE
ELECTRIC MACHINE WITH SEGMENTED
STATOR
Attorney Docket: 3174-000003

Box [Non-Fee Amendment]
Commissioner of Patents and Trademarks
Washington, D.C. 20231

DECLARATION OF DONALD J. WILLIAMS
UNDER 37 C.F.R § 1.132

I, Donald J. Williams, hereby declare that:

- 1) I am a Program Manager for Emerson Electric Co. and one of the named inventors of the above-identified U.S. Patent Application.
- 2) I am not aware of any prior use, patents, or printed publications that show a switched reluctance electric machine with a segmented stator. Outside of Emerson Electric Co., I have never seen a segmented stator switched reluctance machine.

- 3) While working at Emerson Electric Co., I helped design a switched reluctance machine with a non-segmented stator. Because rotor position transducers were too expensive, we implemented sensorless rotor position sensing.
- 4) During production of the non-segmented switched reluctance motor, Emerson had a difficult time winding the teeth of the non-segmented switched reluctance machine in a consistent manner such that the sensorless rotor position sensors consistently met our performance specifications. We decided that the non-segmented switched reluctance machine would not be able to consistently meet the higher performance goals for our next generation switched reluctance machine.
- 5) When designing the next generation switched reluctance machine, we needed to improve the manufacturing tolerances and the electrical characteristics of the stator teeth for use with sensorless control. We decided to segment the stator and precisely wind each stator tooth individually. The stator segments were then assembled into the stator.
- 6) The segmented approach allowed the windings to be precisely positioned on each stator segment. The segmented approach significantly improved the manufacturing tolerances and electrical characteristics of the switched reluctance machine as compared with the non-segmented switched reluctance machine.
- 7) The improved manufacturing tolerances and electrical characteristics would allow for less costly drive circuits to be used and/or more accurate

control of the switched reluctance machine. The segmented design would alleviate the winding placement problems that were encountered with non-segmented switched reluctance machines. The segmented approach would also allow us to consistently meet our performance goals for the second generation switched reluctance machine.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Don Williams 9-12-02

Donald J. Williams